

| Year | Species | Country | StateName |
|------|--------------------------------------------|---------------|-------------|
| 2008 | <i>Amaranthus palmeri</i> | United States | Alabama |
| 2013 | <i>Conyza canadensis</i> | United States | Alabama |
| 2013 | <i>Ambrosia artemisiifolia</i> | United States | Alabama |
| 2012 | <i>Amaranthus palmeri</i> | United States | Arizona |
| 1994 | <i>Amaranthus palmeri</i> | United States | Arkansas |
| 2003 | <i>Conyza canadensis</i> | United States | Arkansas |
| 2004 | <i>Ambrosia artemisiifolia</i> | United States | Arkansas |
| 2005 | <i>Ambrosia trifida</i> | United States | Arkansas |
| 2006 | <i>Amaranthus palmeri</i> | United States | Arkansas |
| 2011 | <i>Amaranthus palmeri</i> | United States | Arkansas |
| 2015 | <i>Amaranthus tuberculatus (=A. rudis)</i> | United States | Arkansas |
| 2016 | <i>Amaranthus palmeri</i> | United States | Arkansas |
| 2017 | <i>Amaranthus palmeri</i> | United States | Arkansas |
| 2005 | <i>Conyza canadensis</i> | United States | California |
| 2014 | <i>Conyza canadensis</i> | United States | California |
| 2015 | <i>Amaranthus palmeri</i> | United States | California |
| 1982 | <i>Kochia scoparia</i> | United States | Colorado |
| 1989 | <i>Kochia scoparia</i> | United States | Colorado |
| 1999 | <i>Kochia scoparia</i> | United States | Colorado |
| 2012 | <i>Kochia scoparia</i> | United States | Colorado |
| 2019 | <i>Amaranthus palmeri</i> | United States | Connecticut |
| 2000 | <i>Conyza canadensis</i> | United States | Delaware |
| 2003 | <i>Conyza canadensis</i> | United States | Delaware |
| 2005 | <i>Ambrosia artemisiifolia</i> | United States | Delaware |
| 2010 | <i>Conyza canadensis</i> | United States | Delaware |
| 2012 | <i>Amaranthus palmeri</i> | United States | Delaware |
| 2014 | <i>Amaranthus palmeri</i> | United States | Delaware |
| 2008 | <i>Amaranthus palmeri</i> | United States | Florida |
| 2013 | <i>Amaranthus palmeri</i> | United States | Florida |
| 2013 | <i>Amaranthus palmeri</i> | United States | Florida |
| 2000 | <i>Amaranthus palmeri</i> | United States | Georgia |
| 2005 | <i>Amaranthus palmeri</i> | United States | Georgia |
| 2008 | <i>Amaranthus palmeri</i> | United States | Georgia |
| 2008 | <i>Amaranthus palmeri</i> | United States | Georgia |
| 2010 | <i>Amaranthus palmeri</i> | United States | Georgia |
| 1989 | <i>Kochia scoparia</i> | United States | Idaho |
| 1997 | <i>Kochia scoparia</i> | United States | Idaho |
| 2014 | <i>Kochia scoparia</i> | United States | Idaho |
| 1992 | <i>Kochia scoparia</i> | United States | Illinois |
| 1993 | <i>Amaranthus tuberculatus (=A. rudis)</i> | United States | Illinois |
| 1995 | <i>Kochia scoparia</i> | United States | Illinois |
| 1996 | <i>Amaranthus tuberculatus (=A. rudis)</i> | United States | Illinois |
| 1998 | <i>Ambrosia trifida</i> | United States | Illinois |
| 1998 | <i>Ambrosia artemisiifolia</i> | United States | Illinois |
| 2001 | <i>Amaranthus tuberculatus (=A. rudis)</i> | United States | Illinois |
| 2002 | <i>Amaranthus tuberculatus (=A. rudis)</i> | United States | Illinois |

MOAs

EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), PPO inhibitors (E/14)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Long chain fatty acid inhibitors (K3/15), Microtubule inhibitors (K1/3)
Long chain fatty acid inhibitors (K3/15)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)
EPSP synthase inhibitors (G/9)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
Synthetic Auxins (O/4)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
PSI Electron Diverter (D/22)
ALS inhibitors (B/2), PPO inhibitors (E/14)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
Synthetic Auxins (O/4)
EPSP synthase inhibitors (G/9)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
ALS inhibitors (B/2), Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2), Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
ALS inhibitors (B/2)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2), Photosystem II inhibitors (C1/5), PPO inhibitors (E/14)

Actives

glyphosate

glyphosate

glyphosate

pyrithiobac-sodium, glyphosate

imazethapyr, imazaquin, pyrithiobac-sodium, chlorimuron-ethyl, diclosulam

glyphosate

glyphosate

glyphosate

glyphosate

pyrithiobac-sodium, fomesafen, trifloxsulfuron-sodium

glyphosate

imazethapyr, pyrithiobac-sodium, flumetsulam, fomesafen, lactofen, acifluorfen-sodium, fluthiacet-methyl, carfentrazon S-metolachlor

glyphosate

paraquat, glyphosate

glyphosate

atrazine

metsulfuron-methyl, triasulfuron

dicamba

glyphosate

imazaquin, chlorimuron-ethyl, halosulfuron-methyl, sulfometuron-methyl, glyphosate

glyphosate

paraquat

imazethapyr, imazapyr, imazaquin, pyrithiobac-sodium, chlorimuron-ethyl, metsulfuron-methyl, halosulfuron-methyl, pr thifensulfuron-methyl, tribenuron-methyl, glyphosate

glyphosate

chlorimuron-ethyl, glyphosate

pyrithiobac-sodium, imazapic

glyphosate

glyphosate, imazapic

imazethapyr, imazapic

glyphosate

pyrithiobac-sodium, glyphosate

atrazine

pyrithiobac-sodium, atrazine, glyphosate, imazapic

chlorsulfuron

dicamba

glyphosate

atrazine

imazethapyr, thifensulfuron-methyl, chlorimuron-ethyl

metsulfuron-methyl, atrazine

imazethapyr, thifensulfuron-methyl, flumetsulam, atrazine

imazethapyr, cloransulam-methyl

imazethapyr, cloransulam-methyl

atrazine, cyanazine

thifensulfuron-methyl, atrazine, fomesafen, lactofen, acifluorfen-sodium, imazamox

Situations
Soybean
Corn (maize), Cotton, Soybean
Cotton
Cotton
Soybean
Cotton
Soybean
Soybean
Cotton, Soybean
Soybean
Cotton, Soybean
Cotton, Soybean
Soybean
Corn (maize), Orchards, Roadsides, Grapes, Wheat, Fencelines
Almonds
Corn (maize)
Corn (maize)
Roadsides, Wheat
Corn (maize)
Cereals
Pumpkin and squash
Soybean
Soybean
Soybean
Soybean, Wheat
Soybean
Soybean
Cropland
Corn (maize), Cotton
Soybean
Peanut (groundnut)
Cotton, Soybean
Cotton
Corn (maize)
Corn (maize)
Roadsides, Wheat
Roadsides
Corn (maize), Sugar beets
Cropland, Railways
Corn (maize), Soybean
Corn (maize), Cropland, Wheat
Corn (maize), Cropland, Soybean
Soybean
Soybean
Corn (maize)
Corn (maize), Cropland, Soybean

| | | | |
|------|-------------------------------------|---------------|----------|
| 2005 | Conyza canadensis | United States | Illinois |
| 2006 | Amaranthus tuberculatus (=A. rudis) | United States | Illinois |
| 2009 | Amaranthus tuberculatus (=A. rudis) | United States | Illinois |
| 2009 | Amaranthus tuberculatus (=A. rudis) | United States | Illinois |
| 2010 | Amaranthus palmeri | United States | Illinois |
| 2013 | Conyza canadensis | United States | Illinois |
| 2013 | Amaranthus palmeri | United States | Illinois |
| 2013 | Amaranthus palmeri | United States | Illinois |
| 2016 | Amaranthus palmeri | United States | Illinois |
| 2016 | Amaranthus tuberculatus (=A. rudis) | United States | Illinois |
| 2016 | Amaranthus tuberculatus (=A. rudis) | United States | Illinois |
| 1995 | Kochia scoparia | United States | Indiana |
| 1998 | Ambrosia artemisiifolia | United States | Indiana |
| 1998 | Ambrosia trifida | United States | Indiana |
| 2002 | Conyza canadensis | United States | Indiana |
| 2005 | Amaranthus tuberculatus (=A. rudis) | United States | Indiana |
| 2005 | Ambrosia trifida | United States | Indiana |
| 2005 | Conyza canadensis | United States | Indiana |
| 2007 | Ambrosia artemisiifolia | United States | Indiana |
| 2009 | Amaranthus tuberculatus (=A. rudis) | United States | Indiana |
| 2012 | Amaranthus palmeri | United States | Indiana |
| 2014 | Amaranthus tuberculatus (=A. rudis) | United States | Indiana |
| 1985 | Kochia scoparia | United States | Iowa |
| 1993 | Amaranthus tuberculatus (=A. rudis) | United States | Iowa |
| 1996 | Amaranthus tuberculatus (=A. rudis) | United States | Iowa |
| 2000 | Ambrosia trifida | United States | Iowa |
| 2009 | Amaranthus tuberculatus (=A. rudis) | United States | Iowa |
| 2009 | Amaranthus tuberculatus (=A. rudis) | United States | Iowa |
| 2009 | Ambrosia trifida | United States | Iowa |
| 2009 | Amaranthus tuberculatus (=A. rudis) | United States | Iowa |
| 2011 | Conyza canadensis | United States | Iowa |
| 2011 | Amaranthus tuberculatus (=A. rudis) | United States | Iowa |
| 1976 | Kochia scoparia | United States | Kansas |
| 1987 | Kochia scoparia | United States | Kansas |
| 1993 | Amaranthus palmeri | United States | Kansas |
| 1995 | Amaranthus tuberculatus (=A. rudis) | United States | Kansas |
| 1995 | Amaranthus tuberculatus (=A. rudis) | United States | Kansas |
| 1995 | Amaranthus palmeri | United States | Kansas |
| 2001 | Amaranthus tuberculatus (=A. rudis) | United States | Kansas |
| 2005 | Conyza canadensis | United States | Kansas |
| 2006 | Ambrosia trifida | United States | Kansas |
| 2006 | Amaranthus tuberculatus (=A. rudis) | United States | Kansas |
| 2007 | Ambrosia artemisiifolia | United States | Kansas |
| 2007 | Kochia scoparia | United States | Kansas |
| 2009 | Amaranthus palmeri | United States | Kansas |
| 2011 | Amaranthus palmeri | United States | Kansas |
| 2011 | Conyza canadensis | United States | Kansas |

EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), HPPD inhibitors (F2/27), Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5), PPO inhibitors (E/14)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
ALS inhibitors (B/2)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)
ALS inhibitors (B/2), HPPD inhibitors (F2/27), Photosystem II inhibitors (C1/5), PPO inhibitors (E/14), Synthetic Auxins (O/
Long chain fatty acid inhibitors (K3/15)
ALS inhibitors (B/2), Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
PPO inhibitors (E/14)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
PPO inhibitors (E/14)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), HPPD inhibitors (F2/27), Photosystem II inhibitors (C1/5)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), HPPD inhibitors (F2/27), Photosystem II inhibitors (C1/5)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
ALS inhibitors (B/2)
ALS inhibitors (B/2)
Photosystem II inhibitors (C1/5)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2), PPO inhibitors (E/14)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), HPPD inhibitors (F2/27), Photosystem II inhibitors (C1/5)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)

glyphosate
imazethapyr, chlorimuron-ethyl, glyphosate
imazethapyr, chlorimuron-ethyl, atrazine, mesotrione, tembotrione, topramezone
imazethapyr, chlorimuron-ethyl, atrazine, lactofen, glyphosate
glyphosate
cloransulam-methyl
imazethapyr, primisulfuron-methyl
imazethapyr, primisulfuron-methyl, glyphosate
fomesafen, lactofen, glyphosate
imazethapyr, chlorimuron-ethyl, atrazine, fomesafen, lactofen, acifluorfen-sodium, 2,4-D, mesotrione, tembotrione, top
dimethenamid, acetochlor, S-metolachlor, pyroxasulfone
metsulfuron-methyl, atrazine, cyanazine
imazethapyr, cloransulam-methyl
imazethapyr, cloransulam-methyl
glyphosate
imazethapyr, imazaquin, chlorimuron-ethyl, cloransulam-methyl
glyphosate
chlorimuron-ethyl, cloransulam-methyl
glyphosate
glyphosate
fomesafen
atrazine
imazethapyr
atrazine
prosulfuron, primisulfuron-methyl, cloransulam-methyl
lactofen
glyphosate
glyphosate
thifensulfuron-methyl, rimsulfuron, atrazine, mesotrione, tembotrione, topramezone
glyphosate
imazamethabenz-methyl, thifensulfuron-methyl, chlorimuron-ethyl, atrazine, isoxaflutole, glyphosate, mesotrione
atrazine
chlorsulfuron
imazethapyr
imazethapyr, thifensulfuron-methyl
atrazine
atrazine
imazethapyr, thifensulfuron-methyl, chlorimuron-ethyl, fomesafen, lactofen, acifluorfen-sodium
glyphosate
glyphosate
glyphosate
glyphosate
thifensulfuron-methyl, atrazine, mesotrione, pyrasulfotole, tembotrione, topramezone
glyphosate
thifensulfuron-methyl, chlorsulfuron, tribenuron-methyl, metsulfuron-methyl, rimsulfuron, iodosulfuron-methyl-sodium

Soybean
Corn (maize), Soybean
Seed corn
Corn (maize), Soybean
Corn (maize), Soybean
Soybean
Corn (maize), Soybean
Corn (maize), Soybean
Corn (maize), Soybean, Horseradish
Corn (maize), Soybean
Corn (maize), Soybean
Railways
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Corn (maize), Soybean
Soybean
Railways
Corn (maize), Soybean
Corn (maize)
Corn (maize), Soybean
Soybean
Corn (maize), Soybean
Corn (maize), Soybean
Seed corn
Corn (maize), Soybean
Corn (maize), Soybean
Corn (maize), Railways
Cropland, Wheat
Alfalfa, Corn (maize), Soybean, Sorghum
Alfalfa, Corn (maize), Soybean, Sorghum
Corn (maize), Sorghum
Corn (maize), Sorghum
Soybean
Cotton, Soybean
Soybean
Soybean
Soybean
Corn (maize), Cotton, Soybean
Corn (maize), Sorghum
Cotton, Soybean
Corn (maize), Cotton, Soybean, Wheat

| | | | |
|------|-------------------------------------|---------------|-------------|
| 2013 | Kochia scoparia | United States | Kansas |
| 2013 | Kochia scoparia | United States | Kansas |
| 2015 | Amaranthus palmeri | United States | Kansas |
| 2018 | Amaranthus palmeri | United States | Kansas |
| 2001 | Conyza canadensis | United States | Kentucky |
| 2005 | Ambrosia trifida | United States | Kentucky |
| 2006 | Ambrosia artemisiifolia | United States | Kentucky |
| 2010 | Amaranthus tuberculatus (=A. rudis) | United States | Kentucky |
| 2010 | Amaranthus palmeri | United States | Kentucky |
| 2010 | Amaranthus palmeri | United States | Louisiana |
| 2015 | Amaranthus tuberculatus (=A. rudis) | United States | Louisiana |
| 2002 | Conyza canadensis | United States | Maryland |
| 2014 | Amaranthus palmeri | United States | Maryland |
| 2016 | Ambrosia artemisiifolia | United States | Maryland |
| 1990 | Ambrosia artemisiifolia | United States | Michigan |
| 1998 | Ambrosia artemisiifolia | United States | Michigan |
| 2000 | Amaranthus tuberculatus (=A. rudis) | United States | Michigan |
| 2002 | Conyza canadensis | United States | Michigan |
| 2002 | Conyza canadensis | United States | Michigan |
| 2002 | Conyza canadensis | United States | Michigan |
| 2005 | Kochia scoparia | United States | Michigan |
| 2007 | Conyza canadensis | United States | Michigan |
| 2011 | Amaranthus palmeri | United States | Michigan |
| 2016 | Ambrosia artemisiifolia | United States | Michigan |
| 1994 | Amaranthus tuberculatus (=A. rudis) | United States | Minnesota |
| 1994 | Kochia scoparia | United States | Minnesota |
| 1998 | Ambrosia artemisiifolia | United States | Minnesota |
| 2006 | Ambrosia trifida | United States | Minnesota |
| 2007 | Amaranthus tuberculatus (=A. rudis) | United States | Minnesota |
| 2007 | Amaranthus tuberculatus (=A. rudis) | United States | Minnesota |
| 2008 | Ambrosia trifida | United States | Minnesota |
| 2008 | Ambrosia artemisiifolia | United States | Minnesota |
| 2010 | Ambrosia artemisiifolia | United States | Minnesota |
| 2014 | Amaranthus tuberculatus (=A. rudis) | United States | Minnesota |
| 2016 | Amaranthus tuberculatus (=A. rudis) | United States | Minnesota |
| 1994 | Conyza canadensis | United States | Mississippi |
| 2003 | Conyza canadensis | United States | Mississippi |
| 2007 | Conyza canadensis | United States | Mississippi |
| 2008 | Amaranthus palmeri | United States | Mississippi |
| 2010 | Amaranthus tuberculatus (=A. rudis) | United States | Mississippi |
| 2010 | Ambrosia trifida | United States | Mississippi |
| 2010 | Amaranthus tuberculatus (=A. rudis) | United States | Mississippi |
| 2014 | Ambrosia artemisiifolia | United States | Mississippi |
| 1994 | Amaranthus tuberculatus (=A. rudis) | United States | Missouri |
| 1994 | Amaranthus tuberculatus (=A. rudis) | United States | Missouri |
| 2002 | Conyza canadensis | United States | Missouri |
| 2004 | Ambrosia artemisiifolia | United States | Missouri |

ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5), Synthetic Auxins (O/4)
EPSP synthase inhibitors (G/9), Synthetic Auxins (O/4)

ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), HPPD inhibitors (F2/27), Photosystem II inhibitors (C1/5), Synthetic A
Synthetic Auxins (O/4)

EPSP synthase inhibitors (G/9)

ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)

ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)

Photosystem II inhibitors (C1/5)

ALS inhibitors (B/2)

ALS inhibitors (B/2)

ALS inhibitors (B/2)

Photosystem II inhibitors (C1/5), PSII inhibitor (Ureas and amides) (C2/7)

PSII inhibitor (Ureas and amides) (C2/7)

ALS inhibitors (B/2)

EPSP synthase inhibitors (G/9)

EPSP synthase inhibitors (G/9)

ALS inhibitors (B/2), PPO inhibitors (E/14)

ALS inhibitors (B/2)

ALS inhibitors (B/2)

ALS inhibitors (B/2)

EPSP synthase inhibitors (G/9)

EPSP synthase inhibitors (G/9)

ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)

ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)

EPSP synthase inhibitors (G/9)

ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)

PPO inhibitors (E/14)

EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)

PSI Electron Diverter (D/22)

EPSP synthase inhibitors (G/9)

EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)

ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)

EPSP synthase inhibitors (G/9)

EPSP synthase inhibitors (G/9)

ALS inhibitors (B/2)

EPSP synthase inhibitors (G/9)

Photosystem II inhibitors (C1/5)

ALS inhibitors (B/2)

EPSP synthase inhibitors (G/9)

EPSP synthase inhibitors (G/9)

chlorsulfuron, atrazine, glyphosate, dicamba
glyphosate, dicamba, fluroxypyr
chlorsulfuron, atrazine, glyphosate, 2,4-D, mesotrione
2,4-D
glyphosate
glyphosate
glyphosate
glyphosate
glyphosate
glyphosate
glyphosate
glyphosate
chlorimuron-ethyl, glyphosate
cloransulam-methyl, fomesafen, glyphosate
atrazine
imazethapyr, cloransulam-methyl, imazamox
imazethapyr, thifensulfuron-methyl, chlorimuron-ethyl
chlorimuron-ethyl, cloransulam-methyl
atrazine, simazine, diuron
diuron
triflusulfuron-methyl, imazamox
glyphosate
glyphosate
cloransulam-methyl, fomesafen
imazethapyr, thifensulfuron-methyl
imazethapyr, thifensulfuron-methyl, tribenuron-methyl
imazethapyr, primisulfuron-methyl, cloransulam-methyl
glyphosate
glyphosate
imazapyr, thifensulfuron-methyl, glyphosate
cloransulam-methyl, glyphosate
glyphosate
imazapyr, cloransulam-methyl, glyphosate
fomesafen
fomesafen, lactofen, glyphosate
paraquat
glyphosate
paraquat, glyphosate
pyrithiobac-sodium, glyphosate
glyphosate
glyphosate
imazethapyr, pyrithiobac-sodium, trifloxsulfuron-sodium
glyphosate
atrazine
imazethapyr, imazaquin, thifensulfuron-methyl, chlorimuron-ethyl, prosulfuron, nicosulfuron, halosulfuron-methyl, prim
glyphosate
glyphosate

Corn (maize)
Corn (maize), Sorghum
Sorghum
Sorghum
Soybean
Soybean
Soybean
Soybean
Soybean
Cotton
Cotton, Soybean
Soybean
Soybean
Soybean
Corn (maize), Nurseries
Corn (maize), Nurseries, Soybean
Soybean
Corn (maize), Soybean
Blueberries
Blueberries
Sugar beets
Nurseries
Soybean
Soybean
Soybean
Soybean, Wheat
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Corn (maize), Soybean
Soybean
Corn (maize), Cotton, Rice, Soybean
Soybean
Cotton
Soybean
Soybean
Soybean
Soybean
Corn (maize)
Corn (maize), Cotton, Soybean
Corn (maize), Cotton, Soybean
Soybean

| | | | |
|------|-------------------------------------|---------------|----------------|
| 2005 | Amaranthus tuberculatus (=A. rudis) | United States | Missouri |
| 2008 | Amaranthus palmeri | United States | Missouri |
| 2009 | Ambrosia trifida | United States | Missouri |
| 2009 | Amaranthus tuberculatus (=A. rudis) | United States | Missouri |
| 2011 | Ambrosia trifida | United States | Missouri |
| 1984 | Kochia scoparia | United States | Montana |
| 1989 | Kochia scoparia | United States | Montana |
| 1994 | Kochia scoparia | United States | Montana |
| 2012 | Kochia scoparia | United States | Montana |
| 2013 | Kochia scoparia | United States | Montana |
| 2015 | Conyza canadensis | United States | Montana |
| 1996 | Amaranthus tuberculatus (=A. rudis) | United States | Nebraska |
| 2006 | Conyza canadensis | United States | Nebraska |
| 2009 | Amaranthus tuberculatus (=A. rudis) | United States | Nebraska |
| 2009 | Kochia scoparia | United States | Nebraska |
| 2010 | Ambrosia trifida | United States | Nebraska |
| 2011 | Amaranthus tuberculatus (=A. rudis) | United States | Nebraska |
| 2011 | Kochia scoparia | United States | Nebraska |
| 2011 | Amaranthus palmeri | United States | Nebraska |
| 2011 | Amaranthus palmeri | United States | Nebraska |
| 2012 | Amaranthus tuberculatus (=A. rudis) | United States | Nebraska |
| 2013 | Ambrosia artemisiifolia | United States | Nebraska |
| 2014 | Kochia scoparia | United States | Nebraska |
| 2014 | Amaranthus palmeri | United States | Nebraska |
| 2016 | Amaranthus tuberculatus (=A. rudis) | United States | Nebraska |
| 2016 | Amaranthus palmeri | United States | Nebraska |
| 2002 | Conyza canadensis | United States | New Jersey |
| 2013 | Ambrosia artemisiifolia | United States | New Jersey |
| 2014 | Amaranthus palmeri | United States | New Jersey |
| 2016 | Ambrosia artemisiifolia | United States | New Jersey |
| 1988 | Kochia scoparia | United States | New Mexico |
| 2007 | Amaranthus palmeri | United States | New Mexico |
| 1993 | Ambrosia artemisiifolia | United States | New York |
| 1995 | Amaranthus palmeri | United States | North Carolina |
| 2003 | Conyza canadensis | United States | North Carolina |
| 2005 | Amaranthus palmeri | United States | North Carolina |
| 2006 | Ambrosia artemisiifolia | United States | North Carolina |
| 2006 | Ambrosia artemisiifolia | United States | North Carolina |
| 2015 | Ambrosia artemisiifolia | United States | North Carolina |
| 2016 | Amaranthus palmeri | United States | North Carolina |
| 1987 | Kochia scoparia | United States | North Dakota |
| 1995 | Kochia scoparia | United States | North Dakota |
| 1998 | Kochia scoparia | United States | North Dakota |
| 2004 | Kochia scoparia | United States | North Dakota |
| 2007 | Ambrosia artemisiifolia | United States | North Dakota |
| 2010 | Amaranthus tuberculatus (=A. rudis) | United States | North Dakota |
| 2012 | Kochia scoparia | United States | North Dakota |

ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
Synthetic Auxins (O/4)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
Photosystem II inhibitors (C1/5)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), Photosystem II inhibitors (C1/5), Synthetic Auxins (O/4)
Synthetic Auxins (O/4)
EPSP synthase inhibitors (G/9)
HPPD inhibitors (F2/27)
EPSP synthase inhibitors (G/9)
Photosystem II inhibitors (C1/5)
HPPD inhibitors (F2/27)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
Photosystem II inhibitors (C1/5)
HPPD inhibitors (F2/27), Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5), PPO inhibitors (E/14)
EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)
HPPD inhibitors (F2/27)
ALS inhibitors (B/2)
Synthetic Auxins (O/4)
Photosystem II inhibitors (C1/5)
Photosystem II inhibitors (C1/5), PSII inhibitor (Ureas and amides) (C2/7)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)

imazethapyr, cloransulam-methyl, fomesafen, lactofen, acifluorfen-sodium, glyphosate, imazamox
glyphosate
chlorimuron-ethyl, cloransulam-methyl, glyphosate
chlorimuron-ethyl, cloransulam-methyl, glyphosate
atrazine
chlorsulfuron, metsulfuron-methyl
dicamba, fluoroxypryn
glyphosate
thifensulfuron-methyl, tribenuron-methyl, metsulfuron-methyl, glyphosate
glyphosate
atrazine
glyphosate
imazethapyr, chlorimuron-ethyl, atrazine, 2,4-D, picloram, aminopyralid
dicamba
glyphosate
mesotrione, tembotrione, topramezone
glyphosate
atrazine
mesotrione, tembotrione, topramezone
glyphosate
glyphosate
atrazine
atrazine, mesotrione, tembotrione, topramezone
imazethapyr, chlorimuron-ethyl, atrazine, fomesafen, lactofen, acifluorfen-sodium, glyphosate
atrazine, glyphosate
glyphosate
glyphosate
cloransulam-methyl, fomesafen, glyphosate
sulfometuron-methyl
glyphosate
atrazine, simazine, cyanazine
chlorimuron-ethyl
glyphosate
glyphosate
glyphosate
diclosulam
nicosulfuron, cloransulam-methyl, fomesafen, lactofen, acifluorfen-sodium, glyphosate
mesotrione
chlorsulfuron, metsulfuron-methyl
dicamba
atrazine
metribuzin, diuron, tebuthiuron
glyphosate
glyphosate
glyphosate

Corn (maize), Soybean
Corn (maize), Cotton, Soybean
Soybean
Corn (maize), Cotton, Soybean
Corn (maize)
Railways
Cropland, Wheat
Cropland, Wheat
Cereals
Wheat
Roadsides
Corn (maize)
Soybean
Pastures
Corn (maize)
Soybean
Corn (maize)
Corn (maize), Soybean
Corn (maize)
Corn (maize)
Soybean
Soybean
Corn (maize)
Corn (maize)
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Soybean
Railways, Roadsides
Orchards, Pecan nut
Corn (maize)
Soybean
Cotton
Corn (maize), Cotton, Soybean
Cotton
Peanut (groundnut)
Corn (maize), Soybean
Corn (maize)
Cropland, Wheat
Wheat
Corn (maize)
Railways
Soybean
Corn (maize), Soybean, Sugar beets
Corn (maize), Soybean

| | | | |
|------|-------------------------------------|---------------|----------------|
| 1996 | Amaranthus tuberculatus (=A. rudis) | United States | Ohio |
| 1998 | Ambrosia artemisiifolia | United States | Ohio |
| 1998 | Ambrosia trifida | United States | Ohio |
| 2001 | Conyza canadensis | United States | Ohio |
| 2002 | Conyza canadensis | United States | Ohio |
| 2003 | Conyza canadensis | United States | Ohio |
| 2004 | Ambrosia trifida | United States | Ohio |
| 2006 | Ambrosia artemisiifolia | United States | Ohio |
| 2006 | Ambrosia artemisiifolia | United States | Ohio |
| 2006 | Ambrosia trifida | United States | Ohio |
| 2008 | Amaranthus tuberculatus (=A. rudis) | United States | Ohio |
| 2010 | Amaranthus palmeri | United States | Ohio |
| 1992 | Kochia scoparia | United States | Oklahoma |
| 2002 | Amaranthus tuberculatus (=A. rudis) | United States | Oklahoma |
| 2009 | Conyza canadensis | United States | Oklahoma |
| 2011 | Amaranthus tuberculatus (=A. rudis) | United States | Oklahoma |
| 2013 | Kochia scoparia | United States | Oklahoma |
| 2018 | Amaranthus palmeri | United States | Oklahoma |
| 2018 | Conyza canadensis | United States | Oklahoma |
| 1993 | Kochia scoparia | United States | Oregon |
| 2014 | Kochia scoparia | United States | Oregon |
| 2003 | Conyza canadensis | United States | Pennsylvania |
| 2008 | Ambrosia artemisiifolia | United States | Pennsylvania |
| 2013 | Amaranthus palmeri | United States | Pennsylvania |
| 1989 | Amaranthus palmeri | United States | South Carolina |
| 1997 | Amaranthus palmeri | United States | South Carolina |
| 2006 | Amaranthus palmeri | United States | South Carolina |
| 2010 | Amaranthus palmeri | United States | South Carolina |
| 1988 | Kochia scoparia | United States | South Dakota |
| 2007 | Ambrosia artemisiifolia | United States | South Dakota |
| 2009 | Kochia scoparia | United States | South Dakota |
| 2010 | Amaranthus tuberculatus (=A. rudis) | United States | South Dakota |
| 2010 | Conyza canadensis | United States | South Dakota |
| 1994 | Amaranthus palmeri | United States | Tennessee |
| 1998 | Amaranthus palmeri | United States | Tennessee |
| 2001 | Conyza canadensis | United States | Tennessee |
| 2006 | Amaranthus palmeri | United States | Tennessee |
| 2007 | Amaranthus tuberculatus (=A. rudis) | United States | Tennessee |
| 2007 | Ambrosia trifida | United States | Tennessee |
| 2009 | Amaranthus palmeri | United States | Tennessee |
| 2011 | Amaranthus tuberculatus (=A. rudis) | United States | Tennessee |
| 2015 | Amaranthus palmeri | United States | Tennessee |
| 1993 | Amaranthus palmeri | United States | Texas |
| 1998 | Kochia scoparia | United States | Texas |
| 2006 | Amaranthus tuberculatus (=A. rudis) | United States | Texas |
| 2011 | Amaranthus palmeri | United States | Texas |
| 1998 | Kochia scoparia | United States | Utah |

ALS inhibitors (B/2)
ALS inhibitors (B/2)
ALS inhibitors (B/2)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), PPO inhibitors (E/14)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
Microtubule inhibitors (K1/3)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
Microtubule inhibitors (K1/3)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)

imazethapyr, thifensulfuron-methyl, chlorimuron-ethyl
imazaquin, chlorimuron-ethyl, prosulfuron, halosulfuron-methyl, primisulfuron-methyl, cloransulam-methyl, imazamox
imazaquin, chlorimuron-ethyl, prosulfuron, primisulfuron-methyl, cloransulam-methyl, imazamox
chlorimuron-ethyl, cloransulam-methyl
glyphosate
chlorimuron-ethyl, cloransulam-methyl, glyphosate
glyphosate
chlorimuron-ethyl, cloransulam-methyl, glyphosate
chlorimuron-ethyl, cloransulam-methyl, fomesafen, lactofen
chlorimuron-ethyl, cloransulam-methyl, glyphosate
glyphosate
glyphosate
chlorsulfuron, metsulfuron-methyl, sulfometuron-methyl
imazethapyr, imazaquin, chlorimuron-ethyl, nicosulfuron, primisulfuron-methyl
glyphosate
glyphosate
glyphosate
glyphosate
chlorsulfuron, metsulfuron-methyl
chlorsulfuron, metsulfuron-methyl, triasulfuron
glyphosate
glyphosate
glyphosate
glyphosate
trifluralin
imazethapyr, imazaquin, imazapic
glyphosate
pyrithiobac-sodium, thifensulfuron-methyl, glyphosate, trifloxsulfuron-sodium
chlorsulfuron
glyphosate
glyphosate
glyphosate
glyphosate
imazaquin, pyrithiobac-sodium
trifluralin
glyphosate
glyphosate
cloransulam-methyl
glyphosate
pyrithiobac-sodium, chlorimuron-ethyl, glyphosate
glyphosate
fomesafen, glyphosate
atrazine
metsulfuron-methyl
glyphosate
glyphosate
sulfometuron-methyl

Soybean
Corn (maize), Soybean
Corn (maize), Soybean
Roadsides, Wheat
Corn (maize), Soybean
Soybean
Soybean
Corn (maize)
Soybean
Cotton, Soybean, Wheat
Wheat
Corn (maize), Sugar beets
Soybean
Soybean
Soybean
Cotton, Soybean
Corn (maize), Cotton, Soybean, Peanut (groundnut)
Cotton, Soybean
Corn (maize), Cotton, Soybean
Cropland, Wheat
Corn (maize), Soybean
Corn (maize), Soybean
Corn (maize), Soybean
Corn (maize), Soybean
Cotton, Soybean
Cotton, Soybean
Cotton, Soybean
Corn (maize), Cotton, Soybean
Soybean
Cotton, Soybean
Cotton, Soybean
Cotton, Soybean
Soybean
Corn (maize), Sorghum
Wheat
Corn (maize), Cotton, Sorghum
Cotton
Industrial sites

| | | | |
|------|--------------------------------------------|---------------|---------------|
| 2005 | <i>Conyza canadensis</i> | United States | Virginia |
| 2011 | <i>Amaranthus palmeri</i> | United States | Virginia |
| 1989 | <i>Kochia scoparia</i> | United States | Washington |
| 2007 | <i>Conyza canadensis</i> | United States | West Virginia |
| 1987 | <i>Kochia scoparia</i> | United States | Wisconsin |
| 1995 | <i>Kochia scoparia</i> | United States | Wisconsin |
| 1999 | <i>Amaranthus tuberculatus (=A. rudis)</i> | United States | Wisconsin |
| 2011 | <i>Ambrosia trifida</i> | United States | Wisconsin |
| 2013 | <i>Ambrosia trifida</i> | United States | Wisconsin |
| 2013 | <i>Conyza canadensis</i> | United States | Wisconsin |
| 2013 | <i>Ambrosia artemisiifolia</i> | United States | Wisconsin |
| 2013 | <i>Amaranthus palmeri</i> | United States | Wisconsin |
| 2013 | <i>Amaranthus tuberculatus (=A. rudis)</i> | United States | Wisconsin |
| 2014 | <i>Amaranthus palmeri</i> | United States | Wisconsin |
| 2016 | <i>Amaranthus tuberculatus (=A. rudis)</i> | United States | Wisconsin |
| 2017 | <i>Ambrosia artemisiifolia</i> | United States | Wisconsin |
| 1984 | <i>Kochia scoparia</i> | United States | Wyoming |
| 1996 | <i>Kochia scoparia</i> | United States | Wyoming |
| 2014 | <i>Kochia scoparia</i> | United States | Wyoming |

EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)
EPSP synthase inhibitors (G/9)
ALS inhibitors (B/2), HPPD inhibitors (F2/27)
EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)
EPSP synthase inhibitors (G/9)
Photosystem II inhibitors (C1/5)
ALS inhibitors (B/2)
EPSP synthase inhibitors (G/9)

glyphosate
glyphosate
chlorsulfuron
glyphosate
atrazine
sulfometuron-methyl
imazethapyr
glyphosate
cloransulam-methyl, imazamox
glyphosate
cloransulam-methyl
glyphosate
atrazine
imazethapyr, thifensulfuron-methyl, tembotrione
fomesafen, lactofen, glyphosate
glyphosate
atrazine
metsulfuron-methyl
glyphosate

Corn (maize), Soybean

Soybean

Cereals, Wheat

Corn (maize), Soybean

Corn (maize), Railways

Roadsides

Soybean

Corn (maize), Soybean

Soybean

Soybean

Soybean

Corn (maize), Soybean

Corn (maize), Soybean

Corn (maize)

Soybean

Corn (maize), Soybean

Corn (maize)

Wheat

Sugar beets